



DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R2-ES-2012-0057]

[4500030114]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List Desert Massasauga as Endangered or Threatened and to Designate Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of petition finding and initiation of status review.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to list desert massasauga (*Sistrurus catenatus edwardsii*), a rattlesnake found in the southwestern United States, as endangered or threatened under the Endangered Species Act of 1973, as amended (Act), and to designate critical habitat. Based on our review, we find that the petition presents substantial scientific or

commercial information indicating that listing desert massasauga may be warranted. We will initiate a review of the status of this subspecies to determine if listing is warranted. We are requesting scientific and commercial data and other information regarding this subspecies. Based on the status review, we will issue a 12-month finding on the petition, which will address whether the petitioned action is warranted as provided in section 4(b)(3)(B) of the Act.

DATES: We request that we receive information on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. The deadline for submitting an electronic comment using the Federal eRulemaking Portal (see **ADDRESSES** section, below) is 11:59 p.m. Eastern Time on this date. After [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], you must submit information directly to the Division of Policy and Directives Management (see **ADDRESSES** section, below). Please note that we might not be able to address or incorporate information that we receive after the above requested date.

ADDRESSES: You may submit information by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal:

<http://www.regulations.gov>. Search for Docket No. FWS–R2–ES–2012–0057.

(2) *By hard copy:* Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R2–ES–2012–0057; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM;

Arlington, VA 22203.

We will not accept emails or faxes. We will post all information we receive on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see the Request for Information section below for more details).

FOR FURTHER INFORMATION CONTACT: Michelle Shaughnessy, Assistant Regional Director, Southwest Regional Office, 500 Gold Ave. SW, Room 6034, Albuquerque, NM 87102; by telephone at 505–248–6920; or by facsimile at 505–248–6788. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Request for Information

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly review the status of the species (status review). For the status review to be complete and based on the best available scientific and commercial information, we request information on desert massasauga from governmental agencies, Native American tribes, the scientific community, industry, and any other interested parties. We seek information on:

(1) The subspecies' biology, range, and population trends, including:

(a) Habitat requirements for reproduction, germination, and survival;

(b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures for the species, its habitat, or both.

(2) The factors that are the basis for making a listing, delisting, or downlisting determination for a species under section 4(a) of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*), which are:

(a) The present or threatened destruction, modification, or curtailment of its habitat or range;

(b) Overutilization for commercial, recreational, scientific, or educational purposes;

(c) Disease or predation;

(d) The inadequacy of existing regulatory mechanisms; or

(e) Other natural or manmade factors affecting its continued existence.

If, after the status review, we determine that listing desert massasauga is warranted, we will propose critical habitat (see definition in section 3(5)(A) of the Act), under section 4 of the Act, to the maximum extent prudent and determinable at the time we propose to list the species. Therefore, we request data and information on:

(1) What may constitute “physical or biological features essential to the

conservation of the species” within the geographical range currently occupied by the subspecies;

- (2) Where these features are currently found;
- (3) Whether any of these features may require special management considerations or protection;
- (4) Specific areas outside the geographical area occupied by the subspecies that are “essential for the conservation of the species;” and
- (5) What, if any, critical habitat you think we should propose for designation if the subspecies is proposed for listing, and why such habitat meets the requirements of section 4 of the Act.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made “solely on the basis of the best scientific and commercial data available.”

You may submit your information concerning this status review by one of the methods listed in the **ADDRESSES** section. If you submit information via

<http://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the website. If you submit a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this personal identifying information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <http://www.regulations.gov>.

Information and supporting documentation that we received and used in preparing this finding are available for you to review at <http://www.regulations.gov>, or you may make an appointment during normal business hours at the U.S. Fish and Wildlife Service, Southwest Regional Office (see **FOR FURTHER INFORMATION CONTACT**).

Background

Section 4(b)(3)(A) of the Act requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the **Federal Register**.

Our standard for substantial scientific or commercial information within the Code

of Federal Regulations (CFR) with regard to a 90-day petition finding is “that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted” (50 CFR 424.14(b)). If we find that substantial scientific or commercial information was presented, we are required to promptly conduct a species status review, which we subsequently summarize in our 12-month finding.

The “substantial information” standard for a 90-day finding differs from the Act’s “best scientific and commercial data” standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will announce our determination as to whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act’s standards for 90-day findings and status reviews conducted for a 12-month finding on a petition are different, as described above, a substantial 90-day finding does not mean that our status review and resulting determination will result in a warranted finding.

Petition History

On November 1, 2010, we received a petition dated October 28, 2010, from the WildEarth Guardians, requesting that desert massasauga be listed as endangered or threatened and critical habitat be designated under the Act. Alternatively, the petitioner requested listing of a distinct population segment of desert massasauga in Colorado,

Kansas, and Oklahoma. The petition clearly identified itself as such and included the requisite identification information for the petitioner, as required by 50 CFR 424.14(a).

In a December 1, 2011, letter to the WildEarth Guardians, we responded that we reviewed the information presented in the petition and determined that issuing an emergency regulation temporarily listing the subspecies under section 4(b)(7) of the Act was not warranted. We also stated that we intended to complete an initial finding in Fiscal Year 2012 as to whether this petition contains substantial information indicating that the action may be warranted. This 90-day finding addresses the October 28, 2010, petition.

Species Information

Taxonomy and Description

The desert massasauga (*Sistrurus catenatus edwardsii*) is a rattlesnake (Family Viperidae) classified as a subspecies of massasauga (*Sistrurus catenatus*) (Conant and Collins 1991, p. 232; Ernst and Ernst 2003, pp. 552–553; Collins and Taggart 2009, p. 32). As a widely recognized subspecies, it is a listable entity under the Act.

Mackessy (2005, p. 10) described the color of desert massasauga as gray to light brown, with 37 to 40 darker brown saddles or semicircular blotches, outlined in black, forming a regular pattern on the dorsal surface. A prominent dark brown to black stripe extends from the eye to the angle of the jaw, and a lyre-shaped or paired irregular set of

stripes extends from the dorsal surface of the head to the first body blotch. The base of the rattle on the tail is typically black, but in neonates (young snakes), the tip is yellow. The desert massasauga is relatively small compared to other rattlesnakes, reaching a maximum adult total length of 588 millimeters (mm) (23 inches (in)) (Holycross 2001, p. 59), with an average length of about 380 mm (15 in) (Mackessy 2005, p. 27).

The desert massasauga is venomous, and the venom is used to acquire prey and is toxic to humans. However, due to its small adult size, venom yields are low, and bites to humans, although potentially serious, are not likely to be life-threatening (Mackessy 2005, p. 10). The probability of a desert massasauga biting a human is also very low because there is only a small chance of encountering the snake due to its nocturnality; spotty distribution; and generally cryptic, elusive, and nonaggressive behavior (Werler and Dixon 2000, p. 404).

Habitat

The desert massasauga occurs in a variety of grassland and shrubland habitats, including shortgrass prairie, sandsage grasslands, shinnery oak, Chihuahuan desert, and occasionally sand dune habitat (Degenhardt *et al.* 1996, p. 356; Hobert *et al.* 2004, p. 323; Mackessy 2007, p. 2). Studies in Colorado have shown it inhabits primarily shortgrass prairie habitat with *Artemisia filifolia* (sand sage), *Buchloe dactyloides* (buffalograss), and *Bouteloua gracilis* (blue grama) below about 1,500 meters (5,000 feet) in elevation. Although the species is adapted to xeric (dry) conditions, the

subspecies is most abundant in areas of prairie with more mesic (moist) conditions (Mackessy 2005, p. 23). The snake uses grasses for capturing prey and avoiding predators, as these areas provide protective cover. The subspecies is not often found in scrub or shrub habitats in most parts of its range.

Life History

The biology of the desert massasauga has been studied in some detail in some parts of its range. The snakes hibernate from October to mid-April in Colorado (Hobert *et al.* 2004, p. 324), and from November to March in New Mexico (Degenhardt *et al.* 1996, p. 357) with presumably similar timeframes of hibernation in other parts of its range. They commonly use rodent burrows for hibernation and as birthing sites (Mackessy 2005, pp. 16–17, 23; Mackessy 2007, p. 8). They are mainly nocturnal and may migrate up to 2 kilometers (km) (1.2 miles (mi)) seasonally between locations used for winter hibernation and those used during active periods (Ernst and Ernst 2003, p. 554; Mackessy 2005, pp. 20–21). Desert massasauga feed on a wide variety of prey, including lizards, small mammals, and centipedes (Holycross and Mackessy 2002, p. 456). Females have been observed to give birth in the summer to between 4 and 8 young (Hobert *et al.* 2004, pp. 324–325; Mackessy 2005, p. 29), and may not reproduce every year (Goldberg and Holycross 1999, p. 531). Most adults collected in the field were estimated to be 4 years old or less, though members of the subspecies have lived more than 14 years in captivity.

Distribution and Abundance

The range of desert massasauga is reported with some variation in published accounts, but the subspecies is known to occur from central-western and southern Texas, southeastern Colorado, southern New Mexico, southeastern Arizona, and northern Mexico (Conant and Collins 1991, map 193; Werler and Dixon 2000, pp. 402–403). Historically, the snakes may have occurred in far western Oklahoma and extreme southwestern Kansas contiguous with the range in Colorado, but their present occurrence in both States is unknown (Mackessy 2005, p. 10). Anderson *et al.* (2009, pp. 740–741) provide the most recent description of the range as a series of isolated populations, rather than a continuous distribution.

The desert massasauga in southeastern Colorado is especially disjunct from the rest of the range of the subspecies. The taxonomic relationship of this population to the rest of the other massasauga subspecies was uncertain (Maslin 1965, p. 34) until more analysis by Hobert in 1997 (as cited in Hobert *et al.* 2004, p. 322) placed them as the desert massasauga subspecies. The range of the subspecies in Texas occurs in disjunct populations in far south Texas, including portions of the Gulf Coast, and western and central Texas, east of the Brazos River, where it adjoins the range of the western massasauga (Werler and Dixon 2000, pp. 402–403). However, the distribution map by Anderson *et al.* (2009, p. 741) shows a larger separation between the two subspecies in Texas. In New Mexico, it occurs in the southeastern part of the State contiguous with western Texas and then in isolated populations in the middle and lower Rio Grande

Valley across south-central New Mexico (Anderson *et al.* 2009, pp. 740–741). In Arizona, it occurs in the extreme southeastern part of the State (Anderson *et al.* 2009, pp. 740–741). Only two small disjunct populations are known from Mexico, but extensive searches there have not been conducted (Ernst and Ernst 2003, p. 553). Mackessy (2005, pp. 12, 15) hypothesized that the historic range was likely continuous from southeastern Colorado to northern Mexico but has been fragmented due to climatic changes effecting the distribution of the shortgrass prairie of the Great Plains and human-caused factors that resulted in habitat loss. The current patchy distribution has been hypothesized as a consequence of both narrow ecological tolerances and Holocene (about 12,000 years before present) climate changes (becoming drier) that have fragmented suitable habitat (Greene 1997 in Anderson *et al.* 2009, p. 740).

Across the range, population sizes and trends for the desert massasauga are largely unknown due to the paucity of data collection and analysis. However, numerous herpetologists have made general assessments on the status of the subspecies. For example, Werler and Dixon (2000, p. 406) state that continued alteration of the massasauga's open habitat for farmland and suburban housing development has caused a significant decline in the snake's numbers. In 2001, the Arizona Game and Fish Department (2001, p. 3) reported that, while quantified data are lacking, the desert massasauga has almost certainly experienced long-term population declines and a general range contraction in Arizona. The populations in southeastern Colorado are exceptions, and long-term research there has indicated that local populations in some parts of the State are "reasonably robust and stable" due to intact habitat conditions (Mackessy 2005,

p. 12).

Evaluation of Information for this Finding

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the species responds to the factor in a way that causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant, it may drive

or contribute to the risk of extinction of the species such that the species may warrant listing as endangered or threatened as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively may not be sufficient to compel a finding that listing may be warranted. The information must contain evidence sufficient to suggest that these factors may be operative threats that act on the species to the point that the species may meet the definition of endangered or threatened under the Act.

In making this 90-day finding, we evaluated whether information regarding the status and threats to the desert massasauga, as presented in the petition and other information readily available in our files, is substantial, thereby indicating that the petitioned action may be warranted. Our evaluation of this information is presented below.

Evaluation of Petition Information and Finding for Desert Massasauga

The petition presented information regarding the following factors as potential threats to the desert massasauga: Conversion of native grasslands to crops, heavy livestock grazing, urbanization, energy development, desertification, water diversion and depletion, loss of rodent prey base, proliferation of noxious weeds, direct killing, collection for the pet trade, predation from natural predators, paramyxovirus (disease),

inadequacy of existing regulatory mechanisms, death from vehicle strikes, natural vulnerability (low fecundity, low survivorship, and short lifespan), fragmentation and isolation, human population growth, drought and climate change, and the cumulative impact of these threats. After reviewing the information provided in the petition and information available in our files, we have determined that there is substantial information to indicate the desert massasauga may warrant listing as a result of habitat degradation (from land conversion to cultivated croplands and heavy livestock grazing) and death from vehicular strikes.

Habitat Degradation and Loss

The petition states that habitat degradation and loss are primary threats to the desert massasauga and cites a number of sources to support this position. The specific causes of habitat degradation and loss cited in the petition include conversion to crops, heavy livestock grazing, urbanization, energy development, desertification, water diversion and depletion, loss of the rodent prey base, and proliferation of noxious weeds. Our review of the petition and information in our files found substantial information that significant habitat degradation and loss may be occurring as a result of agricultural land use (conversion of native grasslands to crops) and heavy livestock grazing.

In support of conversion to crops as a source of habitat loss to the species, the petition cites Mackessy (2005, p. 24), who reports that the conversion of grassland to farmland is a concern to the subspecies in southeastern Colorado. When native

shortgrass prairie is converted to cultivated agricultural fields, the habitat for the desert massasauga is directly and completely lost. The snake is not able to complete its life-history needs in cultivated fields due to absence of shelter, prey, and hibernation sites, resulting in a loss of individuals of the subspecies and decline in the size of local populations (Mackessy 2005, p. 42). In addition to direct habitat loss, farmland also fragments the remaining native habitats and may impact the subspecies by isolating populations from one another. This population isolation may put populations at greater risk of loss by resulting in lower population sizes (which are more vulnerable to stochastic events), as well as the prevention of the exchange of genetic material between populations. The petition does not provide any information on the geographic extent of crop conversion across the snake's range outside of Colorado. However, the effects of crop conversion has occurred to at least some extent in other parts of the range, because Anderson *et al.* (2009, p. 740) cites encroachment of agriculture as one of the significant causes of decline and extirpation of desert massasauga populations.

In support of heavy livestock grazing as a source of habitat loss, the petition cites several sources. Mackessy (2005, p. 24) explains that livestock *per se* are compatible with the conservation of the desert massasauga; however, if overgrazing results in severe degradation of the native shortgrass prairie in Colorado, then habitats will be altered and the desert massasauga will not be able to inhabit these areas. Mackessy (2005, p. 47) also states that properly managed grazing can be compatible with desert massasauga, but overgrazing can severely degrade habitat. Zwartjes *et al.* (2005, p. 22) also reports that desert massasauga are grassland specialists that respond negatively to degradation of pure

grasslands by invasive shrub encroachment, which can result from landscape changes due to improper grazing management. They concluded that conversion of grasslands to scrublands in the Southwest (Arizona and New Mexico) have severe negative effects on most populations of desert massasauga due to a loss of protective cover (Zwartjes *et al.* 2005, p. 22). Ernst and Ernst (2003, p. 557) state that the loss of grasslands in the Southwest due to overgrazing has eliminated much of the snake's original habitat. While the petition does not provide specific information on the geographic extent of the concerns for overgrazing, most of the snake's range is used for livestock grazing, which has been a long-time concern for land management and conservation of wildlife in the Southwest (Zwartjes *et al.* 2005, p. 22).

Mortality from Vehicular Strikes

The petition explains that one indirect consequence of any land development, whether for urbanization, agriculture, or energy, is the building and maintenance of roadways across the habitat of the desert massasauga. During active periods for migration and movement in the spring and fall, snakes will cross roadways and at other times will also use roads as basking sites in the evening for the residual warmth provided by the road (Mackessy 2005, p. 41). As a result, vehicle strikes of snakes on roads have been cited by researchers as a significant source of mortality for the desert massasauga (Werler and Dixon 2000, p. 403; Anderson *et al.* 2009, p. 740). In one intensive study in Arizona, 47.5 percent of all desert massasaugas encountered along one stretch of roadway (out of a total of 99 encounters) were found dead due to vehicle strikes (Holycross and

Douglas 1996, p. 10). During one week in May 2005, a Colorado landowner collected 15 dead desert massasaugas along a 1.6-km (1-mi) stretch of a remote, rarely traveled gravel road (Mackessy 2005, p. 46). Mackessy (2005, p. 46) observed that the strikes not only occurred accidentally but also intentionally, as drivers sought to run over rattlesnakes observed in the road. In reviewing the natural predators of desert massasaugas, Ernst and Ernst (2003, p. 556) concluded, "...humans (through habitat destruction and roadkills) probably eliminate more massasaugas each year than all natural predators combined."

We are not aware of any quantitative studies analyzing the population-level effects caused by the loss of individuals from vehicular strikes across the subspecies' range. Roadways occur throughout the subspecies' range, and future development will bring more roads into habitats of the desert massasauga. In areas where roadways are dense or where roads exist in high-quality desert massasauga habitats, vehicular strikes may have significant negative effects on the subspecies due to high levels of mortality reducing the number of adult snakes in local populations resulting in potential population-level effects to the subspecies.

Finding

The information presented in the petition indicates that the desert massasauga is subject to negative effects resulting from habitat degradation (from land conversion to cultivated croplands and heavy livestock grazing) and vehicular strikes. In addition, information is presented that indicates the subspecies may have undergone some range reduction over time and may be experiencing population declines in some portions of its

range. This information is sufficient to suggest that these factors may be operative threats that act on the subspecies to the point that it may meet the definition of endangered or threatened under the Act. Therefore, on the basis of our determination under section 4(b)(3)(A) of the Act, we find that the petition presents substantial scientific or commercial information indicating that listing the desert massasauga throughout its entire range may be warranted. Because we have found that the petition presents substantial information indicating that listing the desert massasauga may be warranted, we will initiate a status review to determine whether listing the desert massasauga under the Act is warranted. If necessary, we will also evaluate during the status review whether a distinct population segment of desert massasauga in Colorado, Kansas, and Oklahoma warrants listing.

This finding was made primarily based on the information related to habitat degradation (from land conversion to cultivated croplands and heavy livestock grazing) and vehicular strikes. We will evaluate all information under the five factors during the status review under section 4(b)(3)(B) of the Act. As noted above, the petition also presented information that there may be other potential threats to the desert massasauga. We will fully evaluate these potential threats during our status review, pursuant to the Act's requirement to review the best available scientific information when making that finding. Accordingly, we encourage the public to consider and submit information related to these and any other threats that may be operating on the desert massasauga (see **“Request for Information”**).

References Cited

A complete list of references cited is available on the Internet at <http://www.regulations.gov> and upon request from the Southwest Regional Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this notice are the staff members of the Southwest Regional Office (see **FOR FURTHER INFORMATION CONTACT**).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Date: July 26, 2012

Thomas O. Melius

Acting Director, U. S. Fish and Wildlife Service

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